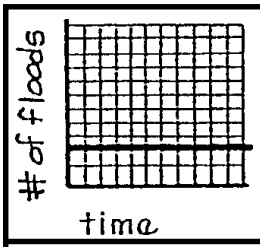
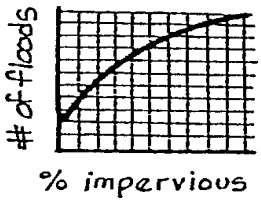
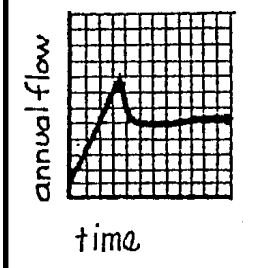
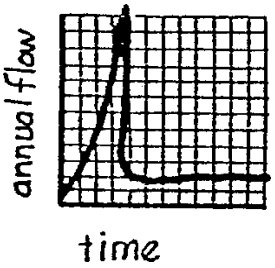
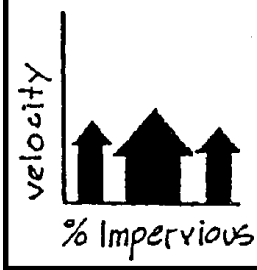
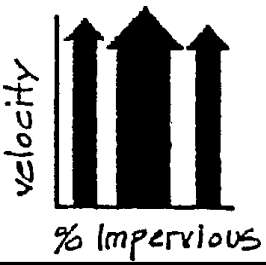
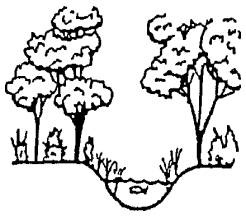
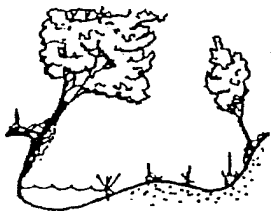
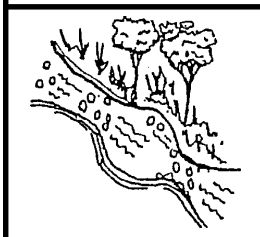
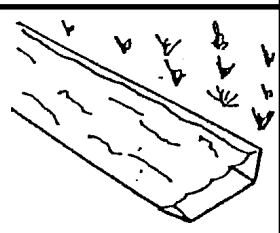
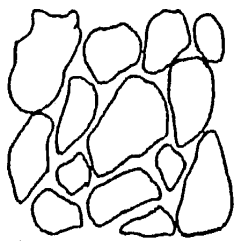
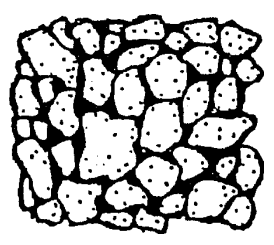
Rock Creek: A Watershed Transformed

Before	After	Impacts of Urbanization
		INCREASED BANKFULL FLOODING The frequency of bankfull floods increases from once every other year prior to development to over 5 each year for a 50% impervious watershed. In Rock Creek, short but intense summer storms turn stream channels into raging torrents, causing severe channel scour and erosion.
		LOWER DRY WEATHER FLOW Reduced dry weather flows may cause small perennial urban streams to become seasonally dry, while significantly reducing the wetted perimeter of larger urban streams, thus reducing aquatic habitat area. In much of Rock Creek, seasonally reduced discharges significantly restrict the availability of fish and aquatic habitat.
		INCREASED STREAM VELOCITY Greater amounts of stormwater discharge in concert with rapid concentration times over smooth, paved surfaces produce increases in stream velocity. In portion of Rock Creek, this increased channel velocity has caused severe erosion and destruction of both aquatic and riparian habitat.
		CHANNEL WIDENING Increased stormflow velocity in urban streams severly erodes the adjacent stream banks, resulting in a loss of riparian habitat and forest cover. In portions of developed areas of Rock Creek, channels have become two to eight times wider than in undeveloped zones.
		LOSS OF POOLS AND RIFFLES Pools and riffles provide habitat diversity for the aquatic community. Stream channel erosion and construction site runoff create significant changes in stream morphology, In portions of Rock Creek, this change has eliminated many pools and riffles that support fish habitat
		CHANGE IN SUBSTRATE QUALITY With urbanization comes a shift in the grain size of channel sediments, from coarser grain particles, to a mixture of fine and course particles. This results in a phenomena known as embedding: sand, silt, and clay fill voids in the channel bottom, reducing water circulation, oxygen, and organic matter needed by aquatic insects.

MWCOG Dept. of Environmental Programs